

**Animal Care and Use Program
Policies & Procedures**

Rodent Survival Surgery



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BACKGROUND

Successful surgical outcomes require appropriate attention to presurgical planning, personnel training, anesthesia, aseptic and surgical technique, assessment of animal well-being, appropriate use of analgesics, and animal physiologic status during all phases of a protocol involving surgery and postoperative care.

In addition, post-operative infections in rodents can and do occur. Such infections, which may not be apparent on casual observation, cause distress to animals and can affect the results of a study. In accordance with standards to minimize surgically induced infections in rodents, as set forth in the NIH *Guide for the Care and Use of Laboratory Animals*, aseptic surgical procedures must be used in rodents expected to recover from surgery and survive for 12 hours or more.

I. SCOPE

This policy applies to all rodent major and minor survival surgeries.

II. POLICY & PROCEDURE

A. Training

Researchers conducting surgical procedures must have appropriate training to ensure that good surgical technique is practiced including asepsis, gentle tissue handling and minimal dissection of tissue, appropriate use of instruments, effective hemostasis, and correct use of suture material.

B. Presurgical Planning

1. Presurgical Planning should include input from all members of the surgical team.
2. The surgical plan should identify personnel, their roles and training needs, and equipment and supplies required for the procedures planned; the location and nature of the facilities in which the procedures will be conducted; and perioperative animal health assessment and care.
3. Presurgical planning should specify the requirements for postsurgical monitoring, care and recordkeeping, including the personnel who will perform these duties.
4. The investigator and veterinarian share responsibility for ensuring that postsurgical care is appropriate.

C. Surgical Facilities

1. Unless an exception is specifically justified as an essential component of the research protocol and approved by the IACUC, aseptic surgery should be conducted in dedicated facilities or spaces (either a dedicated operating room/suite or an area that provides separation from other activities within a laboratory).
2. Most bacteria are carried on airborne particles or fomites, so surgical facilities should be maintained and operated in a manner that ensures cleanliness and minimizes unnecessary traffic.
3. All surgical areas must be clean, uncluttered, and sanitizable.
4. Prior to and after completion of all surgical procedures, all organic debris should be removed from work surfaces. The surfaces should be disinfected using sodium hypochlorite solution or other appropriate disinfectant.

D. Aseptic Technique

1. Aseptic technique is used to reduce microbial contamination to the lowest possible practical level.
2. Preparation of the patient, such as lubricating the eyes, removing hair and disinfection of the operative site with at least three alternating scrubs of Betadine and alcohol is required.
3. Body covering such as a clean lab coat must be worn by all surgeons working in the immediate surgical field. Anyone touching the animal's internal tissues with their fingers or hands must wear sterile surgical gloves. Non-sterile (exam) gloves may be worn only if the animal's internal tissues will be touched and/or manipulated using sterile surgical instruments.
4. A more rigorous aseptic technique would include draping the surgical site with sterile drapes and the use of sterile surgical gloves, caps, masks, and gowns. Use of these more rigorous techniques is recommended when multiple surgical procedures are to be performed on a single animal, or when more infection-susceptible species such as guinea pigs are used.
5. All instruments, supplies, and wound closure materials must be sterile.
6. Surgical procedures may be performed on multiple animals during a single session using one sterile surgical pack, providing care is taken to minimize contamination and the instrument tips are sterilized using a bead sterilizer.

E. Intraoperative Monitoring

1. Careful monitoring and timely attention to problems increase the likelihood of a successful surgical outcome.
2. Monitoring includes routine examination of anesthetic depth and physiologic functions and conditions such as body temperature, cardiac and respiratory rates and patterns.
 - a. The criteria that will be used to assess adequacy of anesthesia and animal intraoperative well-being during the procedure are the following:
 - Absence of response to toe pinch
 - Absence of palpebral (blink) reflex

- Absence of spontaneous movement
 - Respiration rate
- b. If the procedure is expected to last longer than 60 minutes, the following additional monitoring procedures are required:
 - Heart or pulse rate monitoring
 - Temperature
 - c. Maintenance of normal body temperature through the use of circulating water heating pads or homeothermic warming systems is recommended to prevent hypothermia.
 - d. Fluid replacement may be a necessary component of intraoperative therapy depending on the duration and nature of the procedure.

F. Postoperative Care

1. An important component of postsurgical care is observation of the animal and intervention as necessary during recovery from anesthesia and surgery.
2. Immediately after surgery, animals should be in a clean, dry and comfortable area where they can be observed frequently by trained personnel.
3. Immediately after surgery, attention should be given to thermoregulation, cardiovascular and respiratory function, electrolyte and fluid balance, and management of postoperative pain or discomfort.
4. Analgesics must be given unless withholding them is scientifically justified and approved by the IACUC.
5. After recovery from anesthesia, monitoring can be less intense but should include attention to basic biologic functions of intake and elimination and to behavioral signs of postoperative pain, monitoring for postsurgical infections, monitoring of the surgical incision site for dehiscence, bandaging as appropriate and the timely removal of skin sutures, clips or staples.

G. Record Keeping

All surgical procedures, intraoperative monitoring and postoperative monitoring should be appropriately documented and available for review upon request by the veterinarian or IACUC.

H. Request for Deviations

If, in the professional judgment of the investigator, there are legitimate reasons to deviate from the above, exceptions may be allowed. However, such exceptions require scientific justification and the investigator must first obtain approval from the OHSU IACUC.

III. DEFINITIONS

- A. Major survival surgery: A surgical procedure that penetrates and exposes a body cavity or produces substantial impairment of physical or physiologic functions or involves extensive tissue dissection or transection. Examples include, but are

not limited to, some laparotomies, thoracotomy, joint replacement, and limb amputation

- B. Minor survival surgery: A surgical procedure that does not expose a body cavity and causes little or no physical impairment. Examples include, but are not limited to, wound suturing, peripheral vessel cannulation, percutaneous biopsy, castration, subcutaneous implantation of an osmotic pump, and most procedures routinely done on an outpatient basis in veterinary clinical practice.

IV. **AUTHORITY:** *Guide for the Care and Use of Laboratory Animals*, Eighth Edition, 2011.